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ABSTRACT

In 1960, in developing nations, less than half of primary-school-age children were enrolled in school. By the early 1990s, despite rapid population increases in much of the world, the proportion was more than 75%. In most developing countries, education has been largely synonymous with schooling but not entirely. Formal schools have been widely accepted as vehicles for the transmission of official curricula. At the same time, there has been recognition that conventional schools may not provide the means for expanding education beyond a certain point, addressing some educational needs, or serving some populations. As a result of the kaleidoscope of needs, demands, and costs, there have been numerous attempts to develop alternative models of formal education to extend education in developing countries. This paper seeks to contribute to the international discussion of the potential of alternative models as a policy option to provide secondary school education in developing countries. The paper looks in detail at the rationale for expanding access to secondary education, even in countries that have not achieved universal primary education. It examines some of the experience of developing countries and the issues faced in creating and implementing alternative models at the secondary level. The paper highlights the experience of Honduras in developing an alternative junior secondary model. It notes that, although the Honduras experience is still a work in progress, the results of this experience warrant watching. The paper concludes with lessons learned from the literature on use of alternative models for secondary education. (Contains 52 references.) (BT)

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Improving Educational Quality (IEQ) Project

ALTERNATIVE MODELS FOR SECONDARY EDUCATION IN DEVELOPING COUNTRIES: RATIONALE AND REALITIES

Report prepared by:

Vivian Figueredo
Stephen Anzalone

American Institutes for Research

in collaboration with
The Academy for Educational Development
Education Development Center, Inc.
Juárez and Associates, Inc.
The University of Pittsburgh

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Introduction

The expansion of educational opportunity in developing countries during the past four decades has been prodigious. In 1960, less than half of primary school age children were enrolled in school. By the early 1990s, despite rapid population increases in much of the world, the proportion was more than 75 percent. During the same period, the enrollment rate for young people aged 12 to 17 more than doubled, going from 21 to 47 percent (World Bank, 1999a). Clearly, there is a long way to go toward assuring quality education for all, but there has been progress.

If in most countries the expansion of educational opportunity has been central to the cause of development, so too has been the role played by formal schools in the way that education has been conceived, organized, and offered. Schools – whether they are primary schools in villages or universities in the capital – have been the organizational unit of choice for governments and the agency of hope for social advancement on the part of young people and their parents.

In most developing countries, education has been largely synonymous with schooling -- but not entirely. Formal schools have been widely accepted as the vehicles for transmission of official curricula (usually governed by an examination) following a set calendar, in prescribed facilities, staffed by persons deemed to be more-or-less qualified to teach at a given level. At the same time, there has been recognition that conventional schools may not provide the means for expanding education beyond a certain point, addressing some educational needs, or serving some populations. The limitations of the potential reach of the school have included the following:

- The formal knowledge taught in schools is often irrelevant to the lives of many learners;
- There have been insufficient numbers of trained resources to permit the opening of schools in many communities;
- The calendar of the school year or the timing of the school day precludes participation for many learners;
- The cost of expanding the number of conventional schools (especially at the secondary and tertiary levels) exceeds available public resources.

As a result of the kaleidoscope of these needs, demands, and costs, there have been numerous attempts to develop alternative models of formal education to extend education in developing countries. These alternatives have been developed across the different levels of education. Their genesis has been motivated by discrete educational, economic, technological, and political/ideological concerns, or combinations of these concerns. The systems have borrowed some of the structures, content, and methods of formal education. They have claimed, to varying degrees, to provide the equivalent of formal school programs but in a manner that is cheaper, more relevant, or more convenient for the learners or the communities in which the learners live. The attractiveness of alternative models is heightened as demand for education increases and as educational budgets remain

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constrained. This is fueled by the success of many countries in universalizing primary education and by the growing recognition that success in the knowledge-based global economy requires better educated workforces. The attractiveness of alternative models of education has also been heightened by the growing legitimacy of distance education programs around the world as well as a growing interest in making use of the new information and communications technologies in education.

But while there is currently a great impetus for developing alternative paths to secondary school education, this presents considerable dilemmas for educational policy makers. The dilemmas revolve around the question of the legitimacy of the alternative models. Since alternative models tend to attract those who have been unable to access opportunities in the formal system, a major dilemma is how to adapt the school curriculum and school year to meet the needs of the audience. Since many young people are following the program while they are working, there is often a need to compress or "accelerate" coverage of the secondary school curriculum. This raises the question of whether the alternative system produces equivalent results at conventional secondary schools. This is important for parents and students, since few are willing to undertake the effort without the prospect of certification at the end of their studies. Many would see an "alternative" certification of completion of secondary school education as not the "real thing" and therefore unattractive.

Moreover, efforts to make the curriculum more relevant to the needs and circumstances of audiences that do not find a place in conventional schools also face a dilemma. Whatever the merits of a curriculum organized around practical life skills, development themes, or work-oriented content, the problem is the lack of congruence with the examination given to obtain a secondary school leaving certificate. In most countries, the formal system, even when its curriculum is acknowledged as lacking relevance to the real world, casts a long shadow on aspirations and expectations. Curriculum developers for alternative models who start down the road to producing a more relevant curriculum are often roped back into traditional subject-matter content as students and parents become more vocal about passing examinations.

The present paper seeks to contribute to the international discussion of the potential of alternative models as a policy option to provide secondary school education in developing countries. The paper looks in detail at the rationale for expanding access to secondary school education, even in countries that have not achieved universal primary school education. It examines some of the experience of developing countries – and the issues faced -- in creating and implementing alternative models at the secondary level. The paper highlights the experience of Honduras in developing an alternative junior secondary model. Although the Honduras experience is still a work in progress, the results of this experience bear watching. The paper concludes with lessons learned from the literature on use of alternative models for secondary education.

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The Case for Expanding Secondary Education in Developing Countries

Secondary education has not featured strongly in the educational agendas of developing countries. The emphasis during the past three decades has been on the attainment of universal primary school education. Expanding secondary education, if considered at all, has been less urgent. Concurrently, secondary education in developing countries has suffered from a sort of identity crisis, belonging to a nebulous zone where students are at once expected to broaden the academic skills learned in primary school and to prepare for the world of work or higher education (UNESCO, 2001). This double function adds a level of complexity to the expansion of secondary schooling that many countries have been disinclined to tackle.

Currently, this position is beginning to change, particularly in those countries where near-universal primary school enrollment is creating pressure at higher levels. In El Salvador, for instance, primary school enrollments now stand at almost 90 percent, while those for secondary education stand only at 34 percent. El Salvador, like other countries with high primary enrollment rates, now sees secondary school expansion as the next hurdle in its path towards development (Winter, 1999). Latin America as a whole has committed itself to increasing access to quality secondary schooling to at least 75 percent of its children by 2010. Furthermore, many national governments have taken on the challenge of making lower secondary schooling compulsory. In 1994, Indonesia expanded its definition of basic education to include nine years of primary and junior secondary school, and declared the ambitious target that all children aged 7 to 15 years receive basic education by 2004 (in 1996, primary school enrollment stood at 95 percent and junior secondary school enrollment at 58 percent) (Yeom, 2001). The increased attention being paid by countries to expanding opportunities for secondary education is being supported by policies of the multilateral banks and bilateral donors, which in the past have de-emphasized the need to improve secondary education in their efforts to prioritize the expansion of primary education.

SOCIAL DEMAND

A major source of pressure for expanding secondary education is social demand. As primary enrollments rise, many of the new primary school graduates aspire to continue their education. In Brazil alone, secondary school enrollments are growing by over half a million entrants each year. Studies in that country show that the most important determinant in the number of years of schooling attained by children, even after controlling for family income, is the educational level of their parents, so that demand for secondary schooling could grow exponentially as the educational levels of the general population rises (World Bank & IDB, 2000).

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As mentioned above, secondary schooling is a symbol of social advancement. Parents desire to raise the educational attainment of their children, whether or not higher-education or labor-market opportunities truly exist for them in the long run. Indeed, in developing countries where the supply of graduates remains relatively scarce, the private rate of return on secondary schooling, considering both additional earnings and the additional cost of schooling (cash, as well as opportunity costs), may be close to 20 percent (Fuller & Holsinger, 1993).

NATIONAL NEEDS

Not only is demand for the expansion of secondary education strong among students and their families, but developing countries, along with the international development community, are also realizing that current global economic changes necessitate higher levels of educational attainment. The two major changes underway that underscore this need are the expansion of market-based economies and globalization.

Today, more than 80 percent of the world's population lives under a market economy, up from under 30 percent a decade ago. Other economic systems, particularly centrally-planned systems, provided individuals with few opportunities, but with a high level of economic security. Market systems, on the other hand, tend to reward enterprise, innovation, and risk-taking, but offer little security for those unequipped to take advantage of market opportunities. Increasing the educational attainment of individuals is crucial if developing countries are to compete successfully in the faster pace of market economies (World Bank, *Education*, 1999).

Globalization, referring to the increasing volume of global trade and finance, is also changing the educational requirements of nations. Global companies constantly seek better opportunities, including well-trained and productive labor forces, in market-friendly environments. Companies in developing countries are increasingly exposed to foreign competition, requiring them to make decisions and accommodate change more rapidly, elaborate faster processes and produce higher quality outputs at lower costs. Such exposure to global competition tends to increase the skill requirements of a country's workforce, a phenomenon frequently cited in studies of South Korea's economic growth (Alvarez, 2001).

What, then, are the changes in the world economy that are stimulating the need for higher educational attainment? References to the "new economy" and information and communications technologies (ICTs) abound. What makes the "new economy" new is the intersection of the older and more established knowledge economy of the "information revolution" with the more recent networking economy of the "communications revolution," where the latter has allowed quicker and greater access to the ideas provided by the former. The technological changes associated with the communications revolution have spread at an astonishing speed. For example, while it took 38 years for 50 million

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people to listen to radio, within four years the same number of people was navigating the Internet (ILO, 2001).

In the "new economy," the generation and processing of knowledge and information in innovative ways increasingly determines productivity and competitiveness (Watkins, 2000). In fact, the "knowledge worker" of today's economy is one whose job it is to generate ideas (ILO, 2001). In 1991, the United States Labor Department produced the SCANS (Secretary's Commission on Achieving Necessary Skills) Report, which, based on interviews with employers in all sectors of the economy, outlined the basic skills that workers need to succeed in the modern workplace. The five required competencies identified in the report are: (a) the ability to allocate *resources* (time, money, materials); (b) the possession of *interpersonal skills* for effective teamwork and leadership; (c) the ability to acquire, analyze and use *information*; (d) the understanding of how social, organizational, and technological *systems* work; and finally, (e) the ability to use *technology* appropriately. The report also identified eight fundamental skills and qualities with which all workers should be equipped: reading, writing, arithmetic, mathematics, listening, speaking, thinking skills (creative thinking, reasoning, decision making), and personal qualities (responsibility, self-esteem, integrity) (U.S. Department of Labor, 1991).

Although in most developing countries, few of the characteristics of the "new economy" are present outside of capital cities, the forces of globalization are such that these countries cannot afford to ignore the changes transforming the world economy. While the changes in the nature of work may take longer to come about in these countries, the changes are inevitable. Some developing countries already face a dual challenge, with parts of their economies solidly entrenched in the "new economy" while others remain deeply traditional in terms of work practices and technologies.

Information is critical for development; in this sense, developing countries stand to gain from the expanding access to information that the "new economy" provides. Certainly, econometric evidence shows a strong correlation (even if causality is debatable) between the quality of a nation's telecommunications infrastructure and its level of economic growth (ILO, 2001). But the access provided by improved infrastructure is not enough. In order to benefit from networked knowledge, countries will depend on the skills of their workers. The familiar axiom that education and growth go hand in hand has never before been so apparent. Where in the past the comparative advantage of countries rested on their stock of capital and natural resources, in the future, national prosperity will depend increasingly on education as the only medium for imparting the types of skills and qualities identified in the SCANS report. Although the precise causal links between education and productivity are difficult to establish, an enhanced capacity to innovate seems to be of utmost importance (Watkins, 2000).

Failing to raise the educational attainment of their populations will not only cost developing countries in terms of foregone growth, it will also widen the gap between them and developed countries, making

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it increasingly difficult for them to catch up. Indeed, the current changes are already causing the gap between rich and poor to grow within countries, with the minority of wealthy and well-educated individuals poised to take advantage of new technologies and opportunities, while the majority becomes increasingly marginalized. The new economy demands people who are able to harness the wealth of available information in order to create innovative solutions. At the same time, demand declines for people with outdated skills and competencies (ILO, 2001). Evidence shows that technological progress has increased the wages of skilled, educated workers relative to those of unskilled workers. Apparently, "the income distribution patterns of tomorrow will increasingly reflect the distribution of educational opportunity" (Watkins, 2000). Those countries that prepare themselves to compete in the "new economy" by educating their workers will be most suited to benefit from the opportunities it affords.

The development community is progressively coming to the conclusion that in order to participate effectively in the "new economy," a "basic" education must extend beyond primary school. Current economic changes are causing the average number of years of schooling required for the workforce to grow. The new information-based economy requires a workforce with a range of skills and abilities that cannot be imparted adequately through primary education alone. Secondary school is the appropriate setting for acquiring these new skills because most students have already acquired basic skills and knowledge in primary school – even though these skills typically need to be consolidated during secondary school. Secondary school also coincides with the age at which young people make critical career decisions and are ready to learn skills more directly relevant to their future employment.

Not only is secondary education required in the context of the "new economy," but it also seems to be a prerequisite for faster economic growth in general. A World Bank study found that secondary enrollments in developing countries have been positively related to GDP levels over the past three decades (Fuller & Holsinger, 1993). The International Commission on Education for the Twenty-first Century notes: "It is now generally recognized that, for economic growth to take place, a high proportion of the population has to have received secondary education" (UNESCO, 2001). Similarly, participants at the World Education Forum argued that "no country can be expected to develop into a model open economy without having a certain proportion of its work force completing secondary education" (UNESCO, 2001). The World Education Forum has gone so far as to include secondary school enrollment as a component of the Global Competitiveness Index. International comparisons show that exclusive emphasis on primary schooling may result in a labor force that is educationally behind the anticipated level of industrial development (Alvarez, 2001). As globalization acts to integrate developing countries into the "new economy," differences in post-primary educational opportunities will increasingly distort the benefits of economic growth in favor of rich countries: "Without a sustained improvement in coverage and quality of secondary education, developing countries will fall further behind relative to developed countries" (Watkins, 2000).

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STRENGTHENING DEMOCRACY AND SOCIAL COHESION

Besides the economic advantages of expanding secondary education, many countries are also realizing the social benefits of doing so. Over 100 countries now have democratically elected governments, twice as many as a decade ago. For these new democracies to survive, their citizens must be educated so that they are able to understand difficult issues, make informed decisions, and hold officials accountable for their actions (World Bank, Education, 1999). Statistical evidence attests to the marked impact of education on democracy and civil liberties (USAID, 2000). The expansion of educational opportunities increases the voice of the poor, particularly at the local level, where they gain the self-confidence needed to engage in dialogue and influence decisions. Education raises young people's awareness of their civil rights and responsibilities and encourages a sense of national loyalty.

A general secondary education can develop in young people attitudes, such as civic sense and tolerance, that contribute to the proper functioning of society (UNESCO, 2001). Increasingly, secondary education is taking on new roles in terms of promoting the values and practices associated with citizenship and democratic participation in young people (Wolff & de Moura Castro, 2000). Governments and families are beginning to see in secondary education a unique opportunity to advance the socialization of their children.

In many developing countries, the number of unemployed and out-of-school youth is on the rise. The social marginalization of these youths causes them to become disillusioned with their future prospects, a process that threatens social cohesion and stability as young people turn to lives of crime and dereliction. Extending access to education for these youths can provide them with alternatives that will help curb urban drift and violence (World Bank, Education, 1999). It can also help to protect them from hazardous and exploitative labor.

Reaching this age group through education is vital to the success of interventions in areas such as HIV/AIDS and reproductive health education. Evidence on the social effects of secondary education suggests that it increases the labor market participation of young women and supports positive maternal practices. It also reduces fertility rates by increasing girls' time in school and by delaying the age of marriage (Fuller & Holsinger, 1993). Secondary education is also believed to encourage social values such as environmental awareness, cooperation, and cultural identity.

ASSIGNING A PRIORITY TO SECONDARY EDUCATION

Many countries remain far from the goal of achieving universal primary education as committed to at the World Conference on Education for All in 1990. In South Asia, 40 percent of children drop out before completing primary school; in Africa, over 30 percent do so. Furthermore, high enrollment rates do not guarantee high completion rates: Latin America has near universal enrollment, but one

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out of four children drops out before completing primary school (Watkins, 2000). Clearly when faced with such glaring deficiencies in primary education, an important policy question that countries face is what is the appropriate time to expand access to secondary education. The dilemma consists in whether to resolve the problems of access and quality in primary education before placing secondary education on the agenda or to pursue both goals simultaneously.

If considering the question from an economic perspective, countries value the fact that primary schooling offers the highest social returns to investments in education. Nevertheless, country studies reveal numerous cases in which the returns to secondary schooling have exceeded those to primary. Yet this phenomenon might be due to diminishing returns: as the share of the population with primary education grows, the payoff to completing primary school tends to fall (USAID, 2000). Policy makers should be wary of depending too strictly on rates of return since these can be artificially depressed (as when discrimination leads to lower wages for women) or inflated (as when politically-motivated interventions increase the wages of civil servants) by the labor market, making it difficult to determine the actual link between education and productivity (Watkins, 2000).

Despite the lower returns traditionally ascribed to secondary schooling, it is a sound investment for students who complete primary school. The access and quality of secondary schooling are critical for several reasons. First, primary education alone does not provide the skills necessary for the adoption of new production methods and technologies necessary to compete in a global economy, and evidence suggests that secondary schooling is positively associated with the production of high value-added export goods. Second, studies have shown that limited opportunities for secondary education may have the effect of reducing demand for primary education and encouraging dropouts, hindering the goal of universal primary education that many countries have set. Finally, as many countries are already beginning to witness, the progress towards universal primary school education will inevitably increase demand for secondary education, a demand that most systems at present are unable to satisfy (Watkins, 2000).

International development organizations are beginning to change their stance regarding secondary education. The World Bank's 1999 Education Sector Strategy calls on governments to ensure that their children are able to complete primary as well as lower-secondary schooling of adequate quality. It also states that "deferring the acquisition of advanced skills by part of the population until the foundation skills are universally acquired does not make sense if countries are to succeed amidst the global changes now taking place" (World Bank, *Education*, 1999). In keeping with this new policy, the share of the Bank's lending going to secondary education rose substantially in the 1990s.

USAID, for its part, encourages its country Missions to maintain their focus on primary education as long as access and quality at this level remain unsatisfactory. In countries where a substantial proportion of children fail to complete primary school, USAID Missions advise host governments to

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concentrate their financial support for education on the primary level. Nevertheless, USAID policy acknowledges that as countries approach universal completion of primary schooling and as its quality improves, a stronger case emerges for using public funds to subsidize lower-secondary, and eventually, upper-secondary schooling (USAID, 2000).

Expanding Secondary Education: Four Sets of Issues

Developing countries face numerous issues in developing policies to expand access to secondary education. Four sets of issues are addressed below.

MACRO-ECONOMIC ISSUES

The potential for secondary education to positively impact a nation's economic and social development must be qualified with the warning that this will only take place in an environment of political and macro-economic stability. Where weak macro-economic policies depress productivity and inhibit the functioning of markets, an increase in the supply of skilled labor may not be matched by an increased demand for that labor. Zimbabwe offers an illustrative example. During the 1980s, the country invested a large proportion of its national income in education, achieving near-universal primary education in the space of a few years and greatly increasing secondary school enrollment. Yet macro-economic policies geared towards capital-intensive rather than labor-intensive growth undermined the benefits of that investment, creating only 30,000 formal-sector jobs for every 200,000 school-leavers (Watkins, 2000). In many other countries as well, secondary school students encounter a lack of employment opportunities upon graduation. Many are unemployed or underemployed, and many others emigrate in search of better opportunities. This "brain drain" poses a significant threat to the returns that poor countries expect from their investment in secondary education.

ACCESS ISSUES

Evidence shows that countries in which educational attainment within the labor force is more evenly distributed enjoy faster economic growth (USAID, 2000). Yet the distribution of educational opportunity not only has consequences for a nation's economic growth, but also for the distribution of income of its population. For example, in South Korea, the proportion of workers with secondary and post-secondary qualifications grew rapidly after the early 1970s. Where, in the early 1970s, the average income of those with higher education was 97 percent greater than the national average, by the mid-1980s, the difference had fallen to 66 percent. In Brazil, by contrast, the earnings of those with higher education had reached 156 percent above the national average. One reason for the difference between the two countries is that Brazil failed to combine economic growth with equity in education. In the 1950s, Brazil had higher primary school completion rates than South Korea (60 percent vs. 36 percent), but by the mid-1980s, South Korea's primary-completion rates were four times higher than

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Brazil's (Watkins, 2000). As globalization increases the demand for skilled labor relative to unskilled labor, income inequalities will widen, slowing the rate of poverty reduction since the poor will be unable to participate in the market on equitable terms.

Considerable inequities exist throughout the developing world in access to secondary education with students from poorer homes and those in rural areas often excluded from the system because they cannot access existing secondary schools. In Brazil, for example, almost 95 percent of enrollments in lower secondary and 99 percent of those in upper secondary are in urban areas, and very few of the poorest make it through secondary school (World Bank & IDB, 2000).

Since, in the past, academic secondary education has been reserved primarily for the children of the elite, it has been largely geared towards preparing students for university entrance examinations. As secondary education expands, an increasing number of students will come from poorer backgrounds. Schools will have to rethink their objectives as a growing proportion of their students begin to terminate their academic careers upon graduation.

Furthermore, secondary schools have rarely taken into account the needs of working students, expecting them to either work or go to school, but not both. Educational planners will need to consider this factor, especially since the opportunity costs of education increase with a student's age so that secondary schooling is significantly more expensive than primary schooling for poor families. One option is the creation of alternative secondary education models, such as those being discussed in this paper. Another option is the creation of night schooling as part of conventional formal secondary education. Countries that have offered night schooling have found it to be an important option for secondary school students: in Brazil 60 percent of upper-secondary students are enrolled in night classes, as most of them work full time (World Bank & IDB, 2000). Without the option of studying at night, many older and poorer students may opt to drop out of the system all together.

QUALITY ISSUES

Only investments in quality education have a positive impact on economic growth. Assessing educational quality is a challenging task, given that there are no internationally agreed upon standards for measuring progress over time. Nevertheless, there is a broad consensus on what educational quality entails: motivated teachers, a curriculum appropriate to current needs, good teaching materials and an agreeable school environment (Watkins, 2000). According to these criteria, schools in many developing countries fail to meet minimum quality standards. Secondary school teachers lack pedagogical skills as well as adequate knowledge of the subject matters they teach. Learning materials are often scarce and of low quality. Curricula are not relevant either to the needs of the workforce or those of tertiary education. Schools rarely have a sense of mission or identity, and their directors lack authority and recognition.

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Given the needs of the "new economy," secondary education must provide young people with the skills to process information in innovative ways. The aim of education must be to develop students' cognitive skills and equip them with the knowledge of how to learn and the desire to do so; in other words, education must prepare students for lifelong learning. Students must move from being passive recipients of information to being active participants in the process of learning, and teachers must move from being transmitters of information to being facilitators of the acquisition of knowledge (ILO, 2001). Even as knowledge of facts diminishes in relevance, the secondary school curricula of many developing countries are still heavily weighted towards rote learning, instead of promoting understanding and application. Thus, a pressing problem is how to render secondary school curricula more functional for today's needs (UNESCO, 2001).

COST ISSUES

The lack of unit cost estimates by country makes thorough study of the costs of expanding secondary education problematic. Certainly the unit costs of expanding secondary education are considerably higher than those of primary education: for example, in the least developed countries, each secondary school student costs on average about 3.5 times more than each primary school student (Anzalone, 1995). Whereas one teacher can teach all subjects in a primary school, secondary schools require teachers with specialized subject-area knowledge. Qualified secondary school teachers are more difficult to attract since they have more labor market options available to them. Thus, financial incentives for teachers must be substantially higher at the secondary than at the primary level. Presumably, lower secondary is less expensive than upper secondary since, like primary education, it is more general and requires less specialized teachers and classrooms; but there is little expenditure information that differentiates between the lower and upper secondary levels (Garfield, Holsinger & Ziderman, 1994).

The estimated costs of secondary expansion are greatest in sub-Saharan Africa, where countries would need to spend an average of 16.8 percent of their 1990s GNP to raise the enrollment ratio to 100 percent. The main factors accounting for Africa's relatively high unit costs are: 1) inefficient use of teachers; 2) extensive use of expatriate teachers; 3) relatively high wages for teachers; 4) few economies of scale due to the small size of the secondary education system; and 5) relatively large numbers of boarders in the system (Garfield, Holsinger & Ziderman, 1994). The Inter-American Development Bank estimates that Latin America would need to invest over US$10 billion in secondary school construction over the next ten years in order to meet the expected increase in secondary school enrollment from 55 to 75 percent. Given Latin America's recent and expected economic growth, the amount is not excessive if the political will existed to make it happen. In fact, the region should even be able to sustain major quality improvements if it maintained an average growth rate of 3.2 percent per year, as it did between 1990 and 1996 (IDB, 2000). But such an overall average growth rate masks the lower rates of growth likely in many countries, as well as in poorer regions of countries.

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How will developing countries with limited budgets and competing priorities pay for the expansion of secondary schooling? Undoubtedly, the smaller the share of a country's population that completes primary school and progresses on to higher levels, the more regressive public spending at these higher levels becomes (Watkins, 2000). Unfortunately, many developing countries have historically spent large portions of their education budgets on tertiary education, a policy tantamount to public subsidies for the rich in countries where only members of the elite are able to attend universities.

One response to the issue of education budget allocations is found in the Oxfam Education Report, which suggests the following guidelines: 1) at least 6 percent of GDP should be dedicated to education; 2) in countries where a substantial proportion of the primary-school age population is out of school or where dropout rates are high, 60 percent of the education budget should be assigned to primary education; and finally, 3) countries should place greater emphasis on lower secondary education in order to improve transition rates into secondary school (Watkins, 2000). Countries must be careful not to appropriate money currently devoted to primary education in their effort to expand secondary education. In the Philippines, for example, the share of primary education expenditure financed out of the government budget fell sharply over the 1990s, pushing up household costs. Meanwhile, public spending on higher education increased, as did the share of secondary education in the national budget (Watkins, 2000).

A wiser strategy would reduce the share of spending going to higher education in order to expand secondary education. The shift certainly makes sense in terms of economic growth since social returns to secondary education exceed those to higher education. Given the regressive character of spending on tertiary education, countries that do not shift away from public funding of tertiary education also make considerable sacrifices in terms of equity. Correcting this misallocation of funds should be a key element in any educational reform (USAID, 2000). One way of doing this is to introduce cost recovery at higher levels of education. Yet because of strong political pressure from those that benefit from public spending on higher education, governments have typically been reluctant to take this step. At the same time, the need for university-educated persons in developing countries is likely to increase in the knowledge-based economies of the future, and balanced educational policy would not be a sound policy to look toward to bleed the universities in order to fund expansion of secondary school education.

Country evidence confirms that the indirect and direct costs of education impose a heavy burden on poor households. Research also shows that opportunity costs for households rise with the children's age, as their potential to generate income increases. For these reasons the issue of cost sharing is subject to intense debate. For some, parental contributions and school fees constitute valuable devices for generating the resources needed to provide quality education, but opponents see cost sharing as an indirect tax on education, indeed a highly regressive tax since it absorbs a proportionately larger share of the income of the poor than of the non-poor. In El Salvador, for example, the costs borne by

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households for public secondary schooling amounts to 54 percent of the average monthly household income, posing a significant barrier for low income families (Winter, 1999).

As a general guideline, countries should avoid cost sharing at the primary and lower secondary levels, though it may have a role to play in upper secondary, and certainly in tertiary education, especially in countries with lower rates of primary enrollment and completion (Watkins, 2000). Some countries are trying innovative ways of targeting their subsidies for secondary education to the households that need them most: Colombia instituted a system of vouchers for children from poor households to attend private secondary schools (King, Orazem & Wohlgemuth, 1998); and Indonesia, where parents are responsible for fees and other educational expenses at all educational levels, is offering scholarships for needy students and has begun to provide block grants to the poorest 60 percent of schools (Yeom, 2001).

Another critical method to liberate funds for expanding secondary education is to improve the efficiency of the education system. High rates of repetition are a leading cause of inefficiency in the education systems of developing countries at both the primary and secondary levels. Repetition is widely used as a classroom management tool; teachers often believe that their success is reflected in the number of students that fail to advance to the next level. But, by prolonging the school cycle, repetition increases the per capita costs of education, enlarges class sizes, and creates pedagogical problems associated with teaching over-age children. It also discourages children and increases costs for families, both important factors in the high dropout rates observed in most developing countries (Watkins, 2000). Studies in Brazil show that repetition, rather than lack of access, is the principal impediment to the expansion of secondary education (World Bank & IDB, 2000). Besides repetition, dropouts are also a source of inefficiency, since they add to the system's efforts to produce a graduate, consuming educational resources without achieving the objective of graduation.

Alternative Models for Secondary Education: An Overview

The discussion above suggests a strong case for expansion of secondary school education in developing countries – for reasons of assisting national economic growth, improving personal income and well being, strengthening democracy, and promoting social equity and cohesion. But with the goal of universal primary education still unachieved in much of the developing world and the enormous constraints on educational budgets, the expansion of conventional secondary schooling will be difficult. Countries will be drawn toward the search of strategies that will permit widening the path to secondary education for more young people in ways that are not as costly as conventional schools. There is already considerable experience on the part of developing countries to make use of lower-cost alternative models of secondary school education. That experience is reviewed here.

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The term *alternative model* is used in this paper to refer to a learning system for providing formal secondary education outside the framework of conventional schools. An alternative model contains some or all of the following:

- *Policies* that favor participation of students who may not have the qualifications or other means to enter conventional schools;

  Policies that encourage secondary school education among young people who may not have the qualifications or other means to enter conventional schools are the driving force in the establishment of alternative models. The policies are fueled by a desire to open the door to opportunities that have been kept shut through such things as restrictive admission requirements and school fees. Lowering the barriers to entry to secondary education often requires policy makers to make efforts to promote the legitimacy of these programs among learners, educational stakeholders, and employers. Similarly, there is often great pressure to adopt policies that provide opportunities for students who have followed alternative models to sit for secondary school leaving examinations.

- *Organizational arrangements* that permit students to learn at times, locations, or both, more favorable to students who work;

  Most of the participants in alternative models of secondary education are those whose economic circumstances require that they work to support themselves and their families. The seasonal calendars, daily timetables, or geographical locations of conventional secondary schools are often inimical to working students. Alternative models are typically organized for learning to take place after working hours or, in some cases, during work release time negotiated with an employer.

- An *instructional system* that operates at lower costs than conventional schools;

  The impetus toward the development of alternative models of secondary education has been to expand educational opportunities at lower unit costs than those of conventional schools. As was mentioned above, the relatively high cost of conventional secondary schools is the result of the salaries of qualified teachers as well as building and maintaining suitable facilities. Alternative models typically seek to reduce the unit cost of secondary education by achieving a substitution of "labor with capital." This occurs by providing instruction with some mixture of lower cost teachers and learning materials that compensate for the lower teacher qualifications, allow students to learn on their own, or both. Similarly, cost reductions are obtained by making use of existing school facilities after the normal school day, other facilities provided by communities or employers, and by having students study at home.

- *Curriculum and learning materials* that have been designed to take into account the needs and circumstances of the country, community, or learners.

  Some, but not all, alternative models of secondary education carry a curriculum reform agenda, which is reflected in learning materials. Most commonly, the intention is to make the content of secondary education more consistent with the realities of the lives of the student in terms of helping them to improve chances for employment, perform on the job, or to deal more effectively with immediate social issues. The tension between the academic nature of traditional secondary education (which carries the possibilities for access to post-secondary education) and the more practical concerns of a reformed curriculum often looms large. Many attempts to make school curriculum more "relevant" have been clumsy and result in academic renditions of practical skills. There have been, for example, many attempts to make secondary school curriculum more oriented

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to rural life or vocations. These often clash with the aspirations of students, who are seeking an alternative path that will lead them to the cities or away from vocational work.

More recently, there is emphasis on adapting secondary school curricula to make them more relevant to the perceived requirements of knowledge-based economies. Policy makers are now wrestling with the question of whether basic training in the use of computers is a cost-effective addition to both the conventional and alternative secondary school curriculum.

These four features tend to distinguish alternative models from conventional secondary school education. These features crisscross into a variety of different models that characterize themselves differently, depending on the accent given to the features just described. Models that characterize themselves as *distance education* tend to accentuate the instructional system feature. Models that characterize themselves as *open learning* tend to emphasize the policies that guide access to the learning system as embodied in the model. Models that characterize themselves as *group study* tend to accentuate the organizational arrangements of the learning system. Some models tend to characterize themselves as applications of the principal technology used in the instructional system, such as television or radio. But in practice, most alternative models tend to blend one or more of the features described above, and the categories often overlap. The different kinds of models are discussed below, along with examples of applications in developing countries.

DISTANCE EDUCATION

Distance education, which has its roots in correspondence education going back to the nineteenth century, has expanded rapidly throughout the world. The advent of computers and communication technology has helped give distance education new salience and legitimacy and has provided tools that overcome many of the constraints to the delivery of education to students learning at a distance.

One way to define distance education is:

> A set of practices to plan and implement educational activities where there is a separation between teaching and learning. This separation may result from distance, time, or other barriers. Distance education offers a way to overcome this separation, chiefly through its learning materials, the use of information and communication technologies to provide tutoring, linking learners to the system and each other, and the use of feedback and student support systems. The technologies used in distance education systems include mail, face-to-face sessions, radio, television, audio and videocassettes, compact disks, email and other computer connections, and teleconferencing systems (Murphy, Anzalone, Bosch and Moulton, 2002, p. 3).

Distance education is a financially attractive option primarily because it avoids many of the variable costs of conventional education. The proportion of variable to fixed costs tends to be higher in

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conventional education than in distance education. Variable costs are those that depend directly on the number of students, including teachers' salaries, facilities, books and other materials. In conventional systems, total costs increase in proportion to the number of children being educated, so that average and marginal costs are roughly equal.

By replacing teachers with self-instructional materials, distance education can significantly reduce the amount of resources devoted to teachers' salaries, a category that consumes a high proportion of the educational budgets of developing countries. Even programs with face-to-face contact usually employ facilitators that require much lower compensation than conventional teachers. Another important cost-reducing factor is the high student-teacher ratios in most face-to-face distance education sessions. For example, in Malawi, the student-teacher ratio in traditional secondary schools is 25:1 while in the distance education study groups it is 55:1 (Murphy & Zhiri, 1992). Finally, distance education allows the system to save on the costs of building educational facilities.

Distance education programs require heavy investment in design, publishing, broadcasting, technological infrastructure, and preparation of teaching materials. These are fixed costs in that they are incurred regardless of the number of students enrolled in the system. But once the initial investment is in place, the relatively low variable costs of distance education means that the cost of each additional student entering the system is very low. For example, if radios are widely available, it costs no more to broadcast to a million students than to a hundred. Nevertheless, there are practical limitations in reaching economies of scale. The national audience, for example, for a ninth grade biology class may be quite small in many countries. Similarly, work schedules of students in a distance education program may be such that they cannot be reached by a broadcast occurring once during the day.

Yet the use of distance education methods has shown considerable cost savings in actual practice. Experience of African countries is suggestive of the magnitude of such cost savings. In Malawi, for example, the use of correspondence education with tutorial support through study centers was shown to operate at one fifth the recurrent cost per student of that in regular secondary schools (Curran and Murphy, 1992). Perraton (1993) concluded that the costs of the National Correspondence College in Zambia resulted in per student costs for secondary education at between one-quarter and one-twentieth of the costs of regular secondary schools. Another comparison of pass rates in the Junior Certificate examination in Malawi showed that, on average, the costs per examination pass for study center students were about half the costs of those of secondary school students (Murphy, Anzalone, Bosch and Moulton, 2002, p. 34).

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OPEN-LEARNING MODELS

The term open learning has been defined as "primarily a goal, or an educational policy: the provision of learning in a flexible manner, built around the geographical, social and time constraints of the individual learners, rather than those of the educational institution" (Bates, 1995, p. 27). Three examples, from India, South Korea, and the Philippines, characterize the open-learning model.

INDIA

In 1989, the Government of India established the National Open School (NOS) in order to extend secondary education to students without access to the conventional system. The School awards certificates in grades 10 and 12, which are widely recognized by government and employers as well as by more than 70 Indian universities. The primary medium of learning in NOS is the self-instructional guide. Supplementary audio and video programs are available through study centers; these audiovisual tools are meant to reinforce learning and are not an actual part of the program.

To date, NOS has enrolled more than 260,000 students. The School has been particularly successful in reaching disadvantaged groups such as girls, members of scheduled castes and tribes, and handicapped persons: in 1993, more than 60 percent of NOS students belonged to these groups. NOS enrolls a higher proportion of these disadvantaged students than the conventional school system. For example, in the formal system, only 26 percent of enrolled students are girls, compared to 38 percent in NOS. After enrolling, students have five years to complete their course of study, allowing them ample time to study at their own pace without having to give up other productive activities. In fact, more than 30 percent of NOS students work, underscoring the attraction of flexible distance education programs for low-income families for whom these programs offer a way to reduce the opportunity costs of education. While NOS generates as much as 92 percent of its recurring costs through student fees, it offers special concessions to girls and people from disadvantaged groups to encourage their enrollment (Anzalone, 1995).

NOS also offers optional contact sessions with teachers on evenings and weekends in which students have a chance to address problems they were unable to resolve on their own. Unfortunately, the effectiveness of the personal contact classes has been limited; many students find it difficult to attend, particularly if they work. Furthermore, since tutors are conventional schoolteachers, they are unfamiliar with independent-learning methods and tend to resort to lecturing. Evaluations have found that up to 40 percent of students do not attend contact sessions at all.

NOS has strong links with conventional secondary schools, which serve as study centers and provide support to students. It maintains strict standards of quality in curriculum; instructional materials are developed by committees of subject experts and educational planners. Nevertheless, despite NOS's efforts to maintain high standards of quality, many people still consider it a second-rate system.

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SOUTH KOREA

In 1974, in an effort to meet the growing demand for secondary schooling, South Korea established the Air Correspondence High School (ACHS), a distance education program leading to the same examinations taken by regular high school students. Student fees, rather than government funding, covered most of the program's costs. ACHS's methodology was based on textbooks for independent study, daily radio broadcasts, and face-to-face sessions. Each subject area had its own textbook, which was actually a version of the textbook used in conventional schools expanded to include additional explanations and self-assessment exercises. The textbooks were so reputable that they were actually in high demand from students in conventional high schools.

ACHS students were expected to dedicate four hours a day to their coursework, as well as to listen to radio lessons broadcast six days a week. These lessons were only transmitted early in the morning and late at night, and they were not repeated. This awkward schedule made it very difficult for students to listen to the radio lessons, but unfortunately a shortage of airtime prevented ACHS from offering more convenient broadcasts. Another shortcoming was the short length of the radio lessons. The fifteen-minute broadcast usually meant that the lessons consisted of a high-speed talk by an academic teacher who tried to pack as much information as possible into the allotted time. Because of the shortage of funds, no special effects or dramatizations could be introduced to enliven the programs. Nevertheless, the fact that students were required to submit notes on each program as a mandatory part of their grade meant that most students did in fact manage to listen to the lessons.

Every other Sunday, students attended face-to-face sessions conducted by regular high school teachers, who were paid for the additional duty. The Sunday sessions were meant to reinforce those subjects deemed particularly difficult or that required practical work. In order to continue to the next grade, students were required to attend at least two-thirds of these sessions. Although the sessions constituted an important part of the program, their usefulness was hampered by the large student-teacher ratios (average 40:1), which made it difficult for students to receive individualized attention. Students coming from remote areas found it difficult to attend the face-to-face sessions regularly. Finally, due to the inconvenience of listening to the radio lessons, the Sunday teachers were often unaware of the subject matter that had been covered the previous week; as a result, they sometimes repeated the same material or contradicted what had been taught on the radio.

ACHS was a highly successful and cost-effective program. In 1977, it had 9,960 enrolled students, 85 percent of which were between the ages of 15 and 23. Their academic achievement was about 12 percent lower than that of regular high school students, but this was not particularly disappointing given that many had been out of school for several years and came from lower socioeconomic backgrounds. The graduation rate per enrolled student was 46 percent and this rate was achieved at one-fifth of the costs per graduate of regular high schools. One important factor in the success of the program is that its curriculum was the same as that of regular high schools so that the objectives of

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ACHS were in line with those of the conventional school system. Furthermore, ACHS succeeded in maintaining rigorous academic standards (Perraton, 1982).

Philippines

The Philippine Nonformal Education Project (PNFE) began in 1995 with funding from the Asian Development Bank (ADB). The project has sparked a transformation in the delivery of nonformal education in the Philippines, shifting its focus from livelihood skills training to formal basic education. PNFE is geared primarily at out-of-school youth and adults aged 15 and above, particularly those from poor and marginalized sectors of society. As a result of the PNFE project, the Philippine government has begun to institutionalize nonformal education within the traditional education sector through the Department of Education's Bureau of Nonformal Education (BNFE). As part of the PNFE project, the Bureau pioneered the Nonformal Education Accreditation and Equivalency (NFE A&E) System, which, as the first true alternative to the formal school system, has made nonformal education an essential component of Philippine basic education. As of 2001, there were NFE A&E learning centers in 10 Philippine regions and 40 school divisions, with 46 service providers and 66,265 learners participating in the program. (Republic of the Philippines, 2001).

The PNFE received funding from the ADB until July 2001 when responsibility for the program passed to the Philippine Government. The Bureau of Nonformal Education is the main implementing agency of the program. It hires independent service providers to organize learning groups and conduct learning sessions as well as educational experts to develop the program's instructional materials. The service providers are also responsible for recruiting the program's 'instructional managers', who maintain student records, provide one-on-one tutoring and help students develop and assess their individual learning plans. Finally, the BNFE hires independent assessment experts to develop the program's assessment tools and procedures. (Republic of the Philippines, 2001).

The NFE A&E System delivers education at both the elementary and secondary levels. The elementary level is aimed at illiterate or semi-literate individuals and reinforces basic reading, writing and mathematic skills. The secondary level is aimed at functionally literate individuals wishing to continue their education. The NFE A&E System is highly flexible, with learning sessions and program participation beginning and ending based on the needs of the learner. Students can use learning materials in designated learning centers or bring them home to use at no cost. Class projects are especially developed to require only the use of readily available materials in order to minimize costs to the student. Students are assigned instructional managers to helps them design 'individual learning plans' based on their learning needs and goals. Students then meet periodically with their instructional manager to assess their progress and resolve any questions that the students may have about the course materials. (Republic of the Philippines, 2001).

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The NFE A&E curriculum allows students ample flexibility in choosing the quantity and subject matter of their courses. The curriculum is meant to cover a set of competencies in keeping with the Philippine 'national definition of functional literacy', which follows the Four Pillars of Learning (learning to know, learning to do, learning to be, and learning to live together). The skills and competencies developed through the curriculum fall within five major categories: 1) communication skills, 2) problem solving & critical thinking, 3) sustainable use of resources/productivity, 4) self development & sense of community, and 4) expanding one's world vision. For each category, the curriculum defines a focus and objectives, each corresponding to different levels of literacy (basic, elementary or secondary). The competencies and skills of the NFE A&E curriculum are generally comparable to that of the formal school system, although the program does not attempt to replicate the formal curriculum or to follow learning levels parallel those of the formal system. (Republic of the Philippines, 2001).

The primary learning materials of the NFE A&E are interactive print modules. Some modules are complemented by audio or video tape materials, and instructional managers often ask learners to refer to supplementary learning materials, including dictionaries, atlases, encyclopedia, books, newspapers, movies, radio programs, among others. The curriculum is designed in such a way as to require less and less support from the instructional managers as the learners progress. Students go through an entry-level assessment in which, together with their instructional manager, they state their learning goals, determine their educational level, and choose the intervention that will best help them achieve their goals. The learning modules are available in both Filipino and English. (Republic of the Philippines, 2001).

Assessment strategies vary across learners. Each module contains pre- and post-tests for self-assessment and students have the option of reviewing their completed modules with their instructional managers. On completion of their program of study, students may go through the NFE A&E Assessment and Certification Process, which includes a multiple-choice test and a written essay, to certify their successful achievement of the Elementary or Secondary educational levels. Upon completion of the program, learners are offered counseling and referral services to help them transition to their next undertaking. (Republic of the Philippines, 2001).

GROUP-STUDY MODEL

Malawi and Indonesia offer examples of a group-study model.

MALAWI

The Malawi College of Distance Education (MCDE) was established in 1965. Its secondary education program is geared to students completing primary but unable to gain entrance into conventional

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secondary schools, as well as to adults who wish to continue their studies at the secondary level. In 1999-2000, the program reached about 80,000 learners (Murphy, Anzalone, Bosch and Moulton, 2002).

The program in Malawi, as in some other African nations, began as an open-learning model. But MCDE administrators soon realized that individual home study was not suitable for adolescents, who needed more face-to-face support (Dodds, 1994). As a result, MCDE switched to the group-study model. In this model, a community usually takes the initiative by requesting that MCDE set up a study center in its vicinity. Students register at their local study center, where they gather daily to work independently on their printed correspondence material. MCDE provides supervisors for each center, as well as the materials used by the students. Most supervisors are certified primary school teachers with two years of teacher training. Supervisors perform administrative tasks, support students as they work on their self-instructional materials, and maintain discipline. They are not expected to teach since they lack adequate subject-matter expertise at the secondary level. In 1986, the average ratio of student to supervisor was 55:1 (Murphy & Zhiri, 1992).

MCDE has been successful in expanding access to secondary schooling to students who otherwise would be unable to continue their post-primary studies. In fact, since 1981, the number of secondary school students enrolled in MCDE has exceeded the number of students in regular secondary schools. The costs of MCDE are significantly lower than the costs of traditional schools: in 1988, MCDE cost about one-third as much per examination pass as regular secondary school (Anzalone, 1995). The MCDE study center system appears to be able to retain students until their examinations with relatively low dropout rates (Murphy & Zhiri, 1992).

In terms of quality, however, MCDE leaves much to be desired. Its printed learning materials are of poor quality (besides being in short supply), students do not have access to laboratories or workshops, and there is a limited choice of subjects. Furthermore, students often lack the ability and motivation to direct their own studies. As a result, on average, MCDE students achieve only a 19 percent pass rate on the Junior Certificate examination, compared to 75 percent for students from regular secondary schools. Lower performance might be expected from MCDE students given that they had already performed poorly enough on primary school leaving-examinations as to be denied acceptance to secondary school (Murphy & Zhiri, 1992). Nevertheless, the pass rate is still disappointingly low. Understandably, parents consider MCDE a second-rate option for their children.

INDONESIA

In 1979, the Open Junior Secondary School (OJSS) was established in Indonesia to extend educational opportunities to secondary school-age children who were not served by the regular education system. The main medium of study of the OJSS is the printed study guide, sometimes supported by audiovisual materials such as audiocassettes, radio programs, and TV or video programs. The government provides the study guides, teaching kits and other materials; in 1999, a government study

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proposed that students should also receive school uniforms and stationery in order to raise their motivation and improve the prestige of the OJSS.

The School follows a group-study model: students meet four to five times per week for at least three hours a day to study independently from specially-designed print modules that are based on the same curriculum as that of regular schools. The study groups meet in regular school buildings, as well as in other community buildings such as mosque verandahs, village halls, and private houses. Facilitators supervise the students' learning activities at the centers. These facilitators include primary school teachers, university students, religious leaders, and health and agriculture extension workers. Each study center is associated with a regular secondary school, called the Base School, and each group is assigned a qualified subject-matter teacher from that school. Once or twice a week, OJSS students attend face-to-face meetings with the Base School teacher. Students' performance is evaluated through midterm and final examinations for each course. Their final assessment is administered at the end of grade 9. Students who pass the examination are awarded the same certificate as students from conventional Junior Secondary Schools.

In 1999, there were 376,620 OJSS students in 3,773 locations throughout Indonesia. Overall, the School has demonstrated positive results. For the period 1980-1998, 95 percent of OJSS students passed the national final examination. Nevertheless, evaluations of the program do reveal some obstacles. OJSS seems to have a difficult time recruiting enough writers capable of developing high-quality learning materials. At the provincial level, there is also a shortage of personnel qualified to implement the distance education program. In some remote areas, there are serious problems in the distribution of learning materials so that sometimes these do not arrive on time or the numbers of copies arriving are insufficient for all the students enrolled. OJSS has also found that students have difficulty becoming active and independent distance education learners. (Indonesian Ministry of Education and Culture, 1999).

TELEVISION AND RADIO MODELS

There are alternative models of secondary education that rely strongly on the use of mass media -- television and radio -- as the principal channels of instruction.

INSTRUCTIONAL TELEVISION MODELS

Mexico

Telesecundaria, initiated in 1968, is one of the most successful and sustained applications of educational television in the world (De Moura Castro, 1998). Telesecundaria allows schools in remote rural areas to deliver a junior secondary curriculum (grades 7 through 9) identical to that of conventional schools. Unlike primary schools where one teacher is in charge of all subjects, at the

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junior secondary level a teacher specializing in the field must teach each separate subject. Most rural schools in Mexico do not have enough teachers to be able to assign more than one per grade. Telesecundaria allows schools to have one teacher per classroom while providing students with appropriate subject matter instruction through television programs and self-study materials.

Communities can request a Telesecundaria program by providing at least 15 students and a place for them to study. The national or state Ministries of Education provide the remaining resources, which include a teacher and television for each of the three grades, a digital signal decoder, a satellite dish, wiring, instructional materials and textbooks, and teacher training. Telesecundaria classrooms average 19 students per grade; students attend school 30 hours per week, 200 days per year, just as in the regular school system. Each lesson consists of a 15-minute television program, which introduces students to the subject matter. The television segments are lively and appealing, resembling network programming for children. This is followed by individual study in a specially designed textbook, teacher-led discussion, group activities applying the lesson to practical situations, and an assessment of student understanding. Lessons are broadcast twice a day, 8 a.m. to 2 p.m. and 2 p.m. to 8 p.m., to accommodate morning and afternoon school sessions. Telesecundaria follows the same curriculum as conventional lower secondary schools, but it also encourages students to play an active role in improving the quality of life of their communities by tackling issues such as hygiene, pollution, water accessibility, and human rights. (Calderoni, 1998).

The program employs only certified teachers with university degrees, who receive one week of intensive training followed by day-to-day learning through televised programs and other in-service training activities (Calderoni, 1998). In addition to teachers, the Telesecundaria staff includes communications experts and specialists in the production of educational materials. Production time per 15-minute module is approximately 20 working days, with a cost ranging from US$30,000 to $50,000. While the per pupil costs of Telesecundaria and traditional secondary schools are similar, Telesecundaria is an important way of providing remote rural areas with access to high quality education (De Moura Castro, 1998).

In 1998, Telesecundaria served almost 800,000 students (grades 7 through 9) in 12,700 rural communities (Calderoni, 1998). Evaluations show that the program is as effective as conventional secondary schools. Telesecundaria students have higher promotion rates and lower dropout rates than conventional schools, and their results on achievement tests are comparable. Important aspects to which Telesecundaria's success are attributed include its full institutionalization within the Ministry of Education, its continued commitment to growth and quality, and the smooth coordination between community teachers and nationally-produced educational programs (De Moura Castro, 1998).

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Brazil

In the 1990s, Brazilian companies began to show an increased interest in improving basic education, sensing that the low educational levels of Brazilian workers was undermining the nation's economic productivity. It was in this context that, in 1995, the Federation of Industries of Sao Paolo contracted with Globo Television Network to prepare a series of television courses for its workers. The industrialists contributed US$30 million toward the production of the new program and Globo agreed to broadcast it without charge. In addition, Globo donated US$60 million worth of commercial television time to promote the new program, Telecurso 2000. Telecurso is unique in that it is 100 percent privately funded and the Brazilian Ministry of Education is in no way involved.

The program is geared primarily at young and adult workers who have not completed their basic education (De Moura Castro, 1998). It offers a condensed version of the basic curriculum, focusing on development of basic skills as well as job-oriented skills and attitudes. Most programs are produced in a work-place setting. Professors from major universities, who must have ample experience in the field of basic education, develop the content for each subject. The primary media for delivery of courses are broadcast or videotaped classroom sessions and print materials. Students must pass a test for each discipline in order to accumulate credits leading to a graduation certificate that is recognized throughout Brazil. Tests are administered monthly for maximum flexibility.

More than 200,000 workers assemble each day in classrooms throughout Brazil to watch Telecurso 2000. A teacher's aid is available to hold discussions, answer questions and provide general support to students. Classes are held in factories, labor unions, civic centers, penitentiaries, ships, and many other settings. Even though the program is geared towards young adult dropouts, regular schools have also taken an interest. Studies reveal that more than 200,000 students in regular academic programs are using Telecurso materials and techniques. Initial evaluations show that Telecurso students actually perform much better than students in conventional schools (De Moura Castro, 2000).

Interactive Radio Instruction Models

Since the early 1970s, eighteen countries have developed Interactive Radio Instruction (IRI) programs, covering diverse subject matters and targeting diverse audiences. The primary goal of IRI has been to improve educational quality, although many countries have taken advantage of the technology to expand access to education. IRI is typically used in regular classrooms, where radio (or audiocassette) lessons are integrated as part of normal classroom activities. IRI programs are interactive in that they not only deliver audio lessons, but they also require students to perform specific group and individual activities during and after the radio program. These activities include answering questions, performing exercises, conducting short experiments, and other practical tasks. The "audio teacher" also provides instructions for the classroom teacher, who facilitates the children's activities.

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No technology-assisted educational intervention in developing countries has proven its effectiveness more consistently than IRI. Evaluations typically show significant learning gains for children taught with IRI methodologies over children in conventional classrooms. In rural areas, IRI has served to close the common urban-rural gap in achievement and has proven particularly powerful in improving girls' performance in math, science and language (Bosch, 1997). IRI has helped to expand educational access by bringing educational opportunities to children who would otherwise have been excluded from the system. Studies show that the programs have strong support from students as well as teachers (De Moura Castro, 1998). IRI students report being more motivated to come to school and their attendance is more consistent than that of students in conventional classrooms. Recent case studies also provide evidence that IRI contributes to the professional development of teachers, who appreciate the opportunity to learn new subjects in a way that does not embarrass them in front of their students (Dock & Helwig, 1999).

The use of IRI has proved to be cost-effective for many countries. After initial development costs, which include planning, scriptwriting, radio production, and piloting programs, annual costs are typically as low as $2 - $3 per student, considering a student population of several hundred thousand (Adkins, 1999).

So far, most IRI applications have been at the primary school or in support of early childhood education. Honduras has pioneered application of the IRI instructional methodology for use at the junior secondary level, and other countries are likely to follow Honduras' lead in the future.

Honduras: A Hybrid Model

Honduras is currently undertaking a major effort to develop an alternative model of junior secondary education. This work, which is being assisted by USAID through the Improving Educational Quality Project (IEQ 2), represents a good example of the issues raised in this paper.

The intention of the Government of Honduras to expand access to junior secondary education embodies much of the general rationale discussed above for investing in secondary school education. It seeks to provide more opportunities for young people working in agriculture and other jobs in rural areas, as well as to improve the human resources capacity of its growing industrial sector. In many areas, participation in the junior secondary education program takes place in factories or in vocational training schools. Honduras also recognizes a serious social problem in that many young people with poor prospects to continue their education or gain employment are attracted to gangs and a life of crime. As a result, the rationale for expanding secondary education in Honduras is both economic and social.

The alternative model of junior secondary education in Honduras is an extension of its 1-6 out-of-school basic education program called Educatodos. Educatodos provides a path to primary school

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equivalency for young people and adults. The 1-6 program uses the interactive radio instruction model discussed previously. The current work enlarges the Educatodos model to make possible a complete cycle of basic education (grades 1 through 9). The program is aimed primarily at young adults (the average age is 25). Successful completion of the program will lead to junior secondary school certification, equivalent to the certification received by those students completing the basic education cycle in the formal schools.

The Educatodos program is an innovative model that draws upon the features of the group study and the interactive radio instruction models discussed above. The organizational arrangements for the program involve forming student-learning groups of about 10 to 20 people. In 2002, the pilot project reached about 3,000 seventh graders (60 percent of whom are women) in over 100 learning centers. Learning groups meet in schools, churches, NGOs, factories, farms, and individual homes. The group meeting times are flexible because the program is delivered via audiocassette instead of radio broadcast which helps to accommodate the requirements of the students. What is unique about the Educatodos model is its provision for use of facilitators to guide groups. The program has operated so far with local volunteer facilitators, who must have completed at least a primary education. They are trained in methodologies for encouraging teamwork, guiding discussions, and creating supportive learning environments. The system of using volunteers greatly reduces the unit costs of expanding secondary education but also represents an important addition to civic responsibility on the part of those willing to volunteer. Honduras recognizes the difficult challenge in sustaining a system that depends on volunteer labor. But so far, the system has shown that it can work. A formal cost study has not been published, but informal estimates indicate that the Educatodos annual per-student costs are about $68. This compares favorably with the $164 annual per-student costs (exclusive of infrastructure, books, furnishings and parent contributions) for conventional secondary school education (Leach, 2001).

The Educatodos instructional system consists of print materials and an audio component (which, as discussed above, is delivered via audiocassettes). Although using audiocassettes is more expensive than delivering radio broadcasts, they have the advantage of allowing the user to avoid a rigid broadcast schedule, as well as allowing the facilitator some flexibility in being able to stop, start, and replay cassettes at different points in the lesson. The audio portion of the lessons provides the overall instructional framework for the class session and spark the group work. Part of the class session is devoted to working with the print materials with assistance from the facilitator. The challenge for program developers has been to ensure integration of the audio and print components and to make both sets of materials interactive in ways that are suitable to older learners.

The Educatodos program aims not at delivering the existing secondary school curriculum but at developing a new, integrated curriculum that is more oriented toward national and personal development. Topics covered in the integrated curriculum include environment, health, citizenship and democracy, population, national identity, creative arts, theater, and physical education. In addition to the integrated curriculum, Educatodos offers instruction in English as a second language through a

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lively series called *Hi, Honduras.* Many of the themes of the integrated program are reinforced in the English lessons.

An evaluation of the pilot in grade 7 of the Educatodos program has been completed. A copy of the report is available through the Improving Educational Quality (IEQ) Project website (www.ieq.org).

Alternative Models: Some Lessons Learned

The preceding discussion suggests a number of lessons that are useful in guiding consideration for policy and program planning with respect to the development of alternative models for secondary education in developing countries.

RATIONALE

The discussion above underscores the growing importance of expanding opportunities for secondary education in developing countries. Expansion of secondary education is necessary in order to respond to the needs of countries looking to compete effectively in the emerging global economy. This new economy will require people with the ability to operate within complex information systems for production and distribution of goods and services. There are important social benefits to be realized as well. Countries will face growing social demand for secondary education that will be difficult for them to ignore as they try to foster equity and the growth of democratic institutions.

The costs of expanding conventional secondary education is prohibitive for many developing countries, and relying on lower-cost alternative systems will not only be attractive but also inevitable. The discussion above shows a considerable range of experience that countries can draw upon to design models that suit their national needs and conditions. There is evidence that alternative systems can provide good educational returns for investment. The experiences of countries like Mexico, Brazil, South Korea, and Indonesia demonstrate that alternative models can eventually reach large audiences and become an important aspect of a national program to expand opportunities for secondary education. But this has not been the case universally in developing countries. In Africa, for example, it has been found that:

> The experience using distance education and information and communication technology for secondary education has not been conclusive. Although several efforts have been made to use distance education modalities to increase access to secondary education – and some have functioned well – none stands out as a model for replication. While there is evidence to suggest that investing in programs to increase access could be more cost effective than conventional educational approaches – and the study center system in Malawi offers an interesting model to reach primary school leavers – there is no evidence to suggest that such

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> programs can be brought to national scale (Murphy, Anzalone, Bosch and Moulton, 2002, p. 24).

The lesson here is that alternative models can and have worked, depending on circumstances, but there is no guarantee that this will always be the case. Countries seeking to develop alternative models are advised to do so cautiously and in a way that is mindful of the challenges they face.

PROGRAM QUALITY

Alternative models will only be sustained over time if they demonstrate to students, parents, and the nation that they offer quality education. The experience with distance education provides important lessons for all alternative models. Distance education can be very effective with young adult and adult learners like those enrolled in Educatodos and Telecurso 2000. But systems that make use of self-instruction as the primary modality of learning face great risks. Self-instruction is an unreliable system of learning for children and adolescents. Young students do not have a clear understanding of their educational goals and are often poorly motivated to follow the disciplined path of self-study. Most students have little experience with self-study and do not realize that they must take responsibility for their own learning without waiting to be prompted by an instructor (Moore & Kearsley, 1996). Because distance learning is self-paced, the usual norms of classroom accountability and discipline do not apply and learning lacks the sense of urgency cultivated in conventional schools (ILO, 2001). Students enrolled in distance education programs often come from disadvantaged groups, perform poorly in primary school, or have been out of school for several years. In other words, distance education students are usually academically weaker than their counterparts in conventional schools, yet they are required to learn in a manner that is much more demanding, requiring the self-discipline to study individually and the intellectual capacity to understand the lesson materials on their own (Murphy & Zhiri, 1992).

Alternative models should provide a means to teach students how the system works and what is expected of them (Moore & Kearsley, 1996). Distance programs in secondary education also require frequent and structured face-to-face student support and supervision. Student-facilitator ratios should be kept sufficiently low so as to permit adequate attention to individual students' needs. Face-to-face sessions must be carefully scheduled in a way that is convenient for the greatest proportion of students. The effectiveness of many programs is hindered when teachers and facilitators, unfamiliar with the goals and techniques of distance education, resort to rote teaching methods. For face-to-face sessions to be effective, teachers and facilitators must be trained in participatory methodologies as well as techniques for motivating independent learners. These provisions, critical to the effectiveness of alternative models, will require sacrificing some of the economies of scale that makes these programs so attractive (Dodds & Mayo, 1992).

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CURRICULUM

The core curriculum of alternative models should be congruent to a large extent with that of conventional secondary schools. This alleviates parents' skepticism about the quality of the programs, making them more likely to enroll their children in the system. Most parents want their children to continue on to higher levels of education. Thus, it is imperative that alternative models – even those that seek to be more responsive to the needs of students and communities – lead to examinations and certifications equivalent to those of conventional school systems. The experience of many distance education programs also shows that student motivation and success benefit when programs include supplementary lessons and activities in areas relevant to their daily lives and future occupations, including lessons in job-related skills as well as topics such as agriculture, human rights, environmental protection, and civic participation. In general, successful programs are those in which students clearly see the benefits of their studies (Murphy & Zhiri, 1992).

METHODS

Most alternative models will rely to some extent on educational media to reach students. Studies show that learning outcomes do not vary significantly with the use of different media. The effectiveness of different media depends more on the content and quality of instructional design than on the type of media employed (World Bank, 1998). Most people can learn appropriately through simple technologies, so that investments in expensive technologies is not usually justified, especially in developing countries where educational budgets are limited and needs are great. In general, a mixture of media is probably the most effective, since different students have different learning needs and styles. Nevertheless, each additional medium increases development time and costs, and raises the complexity of administering the program (Moore & Kearsley, 1996). Alternative models will benefit from following multichannel learning strategies, and there are guidelines available for developing such strategies (Anzalone, 2000).

The primary medium used in alternative models is print, which has the advantages of being able to hold large quantities of information that students can access easily, as well as being relatively convenient to develop and distribute. Nevertheless, it is difficult to stimulate student motivation through print, and it easily becomes a passive and boring medium. Whenever possible, print should be complemented with more interactive media to improve the motivational aspects of distance learning. Many distance education programs rely on radio broadcasts to complement self-instructional print material. Radio has the advantage of allowing for quick and low-cost updating, whereas print is more cumbersome to update and reproduce for distribution. Broadcasts also allow students to feel part of a broader learning community, especially when they are interactive. Alternatively, audio-learning materials can be delivered via audiocassette. Teachers and students often prefer audiocassettes to radio because they can listen to the lessons at their own convenience and as often as they desire. But when a

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program has large numbers of students, reproducing and distributing audiocassettes can be significantly more expensive than using radio broadcasts (Moore & Kearsley, 1996).

Some alternative models of secondary education have successfully incorporated the use of broadcast television in their courses. Television can be more engaging for learners than radio. It is also a good medium for demonstrating complex processes, such as those taught in science or mathematics courses. But unless professionally produced, instructional television programs can appear amateurish. As a result, in order to be good, the use of television in distance education tends to be expensive. Instructional television usually costs about 3 to 5 times more than radio and requires much larger audiences in order to realize economies of scale. Countries without the large populations of Brazil and Mexico will find it difficult to achieve economies of scale through educational television.

While computer-based technology for education and access to the Internet is expanding rapidly in developed countries, this remains a far-off possibility for many developing countries. Poor communications infrastructure, unreliable electricity and telephone networks, and high telecommunications costs present formidable obstacles to connectivity in these countries. For the vast majority of the world's population, access to computer-based learning remains impossible, and the best opportunity for gaining access to an affordable education is through traditional distance learning methods involving print, radio, or television (ILO, 2001). For the time being, the use of computers for learning purposes in the developing world must be restricted to well-designed pilot projects (Wolff & de Moura Castro, 2000). Moreover, the cost of using computers in the classroom greatly limits the amount of time that students can have access to the equipment. This means that computer-based learning can be only a small – but possibly important – supplement to a full program of secondary education.

INFRASTRUCTURE

The successful implementation of alternative models is highly dependent on national infrastructure. Poor roads and inadequate postal systems can hinder timely delivery of printed learning materials and graded exercises, as well as general communications between students and teachers. Lack of electricity can make the use of radio technology very difficult given that batteries in remote areas can be costly and in short supply. When choosing technologies, program developers must also consider whether students will have access to spare parts and qualified repair technicians if required. Experience shows that when alternative programs try to supply the basic infrastructure themselves, the effort is often fatal to the entire project, either because of spiraling costs or logistical difficulties (World Bank, 1998).

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PROGRAM MANAGEMENT

Public ministries often assign personnel from other parts of the education system to develop and run alternative learning programs. But the management of these kinds of programs requires specialized skills that professionals in conventional education systems often do not possess. These skills include expertise in course development, monitoring and evaluation, student support, broadcasting, production and distribution of educational materials, operation of remote sites, and specialized teacher/facilitator training. Managers must be qualified to make decisions related to the medium of course delivery, the costs of program development, and the enrollment numbers required to exploit economies of scale (Murphy, Anzalone, Bosch and Moulton, 2002). In order to develop high quality distance education programs, staff members must receive appropriate training, as required by their new assignments. The system should also strive to develop recognized career paths for its professionals in order to improve its prestige as an authentic system for delivery of education (Dodds & Mayo, 1992).

POLITICAL COMMITMENT

Typically, international donors have shouldered the initial costs of developing distance education programs, with the expectation that national governments would cover the recurrent costs of the system once the initial investments were in place. Experience shows that projects that depend too heavily on foreign aid often collapse when the funding ends because alternate domestic resources are not available to assume the burden (World Bank, 1998). Changing government priorities sometimes result in promising alternative programs being abandoned after initial development, forfeiting the potential economies of scale that program supporters had envisioned. Furthermore, many governments have viewed alternative models solely as a means for lowering educational costs and have been unwilling to fund it at the level required to produce programs of adequate quality. In general, educational planners should keep in mind that alternative models for secondary education should only be undertaken when governments can commit the necessary resources to run them properly (Dodds & Mayo, 1992). Until this happens, such programs will serve only a fraction of their potential audience and will demonstrate poor educational results.

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